

# AMSAT SATELLITE REPORT



**Volume 1 Number 14**  
**August 24, 1981**

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## **UoSAT Launch Date Slips**

The launch date for the UoSAT amateur scientific satellite has slipped by an indeterminate amount. There had been reports that the official launch date had been moved up to 12 Sept. These reports were later discounted and the original date of 15 Sept. was reinstated. Still later, problems with the overall schedule involving the launch of another satellite from Cape Canaveral became known. Most recently, on 14 Aug. NASA announced that the launch would occur no earlier than 16 Sept. and possibly as late as 28 Sept. with dates around the 22nd deemed "most likely."

At press time the precise launch date could not be ascertained. What is known, however, are some of the variables which will determine when in fact the launch will occur. Test firings of a "fix" to the rocket engines will take place on 19 and 28 Aug. On the basis of the results of these tests the SBS (Satellite Business Systems) launch may take place from Cape Canaveral. If the SBS launch does not take place before a certain date, then it will be slipped and the SBS resources committed will be transferred to Vandenberg AFB for the SME (Solar Mesospheric Explorer)/UoSAT launch in late September. All in all, this is quite a muddled picture and not the most easily accommodated in our own game plan.

Riding with the fluctuating launch schedule are a considerable number of AMSAT plans. The most important of these are the basic logistics for the UoSAT launch team. The team from the University of Surrey is now due to arrive at Dulles International Airport, Washington, D.C. on Tuesday, 25 Aug. They planned to spend one day clearing customs with the actual spacecraft. On the 27th they planned to bring the UoSAT spacecraft to the Magnetic Test Facility at the Goddard Space Flight Center, Greenbelt, MD, for final calibration and alignment of the flux gate magnetometer. The Surrey team would then travel to Southern California accompanied by AMSAT team members W3GEY and KE3D (ZS1FE) for the spacecraft integration with the Delta 2310 launch vehicle.

The AMSAT Launch Information Network/Service (ALINS) will be activated for the launch. Plans for the ALINS at press time included the following specifics:

Primary Frequencies: (U.S.A.) 14,305 kHz  
21,280 kHz  
7,182 kHz

Secondary Frequency: (U.S.A.) 14,282 kHz  
(Employed if station facilities available)

Primary Frequencies: (U.K.) 3780 kHz  
7080 kHz  
144.280 kHz

Tentative arrangements have been made to transmit from California on 14,305 and 7182 and from the East Coast on 21280 and (perhaps) 14282. Details on the launch date, ALINS station callsigns to watch for and other details of the UoSAT launch will be transmitted on all the regular AMSAT nets as they are available. Interested parties are encouraged to pay especially close attention in the weeks to come given that schedule is presently in flux as explained above.

## **AO-7 Diehard Battery**

AMSAT-OSCAR 7 continues to kick open the coffin lid! Most recently G4JJ reports good reception of the 70 cm AO-7 beacon. As relayed by G3IOR, the report had G4JJ hearing AO-7 on 8 Aug. from 2030 to 2040 UTC sending slow cw. This report particularly intrigued AMSAT Officials contacted since it represented a notable change from prior isolated reports of reception of the 70 cm beacon. The significant difference here, these officials pointed out, was the length of time G4JJ apparently observed the beacon. If replicated, this observation may indicate a favorable trend in battery condition which may lead to the chemical breakthrough in the battery that has been eagerly hoped for the world over. The last hope AO-7 devotees have had, according to the most widely held hypothesis, is if the battery again goes open as it did in connection with the 1978 cell failure. The present observation may be one hint that such a circumstance is developing though Officials asked extreme caution be exercised in making too much of an isolated observation, reliable though it may have been. To indicate a favorable trend, AMSAT Officials pointed out, a series of well-documented observations is necessary and it is premature to now draw any conclusions as regards the meaning of G4JJ's report.

### **AO-8 Reference Orbits**

25 Aug 81	17695	00:35:05	71.9
1 Sep 81	17793	01:07:29	80.2
8 Sep 81	17891	01:39:52	88.4



## UoSAT Packaged for Trip

University of Surrey engineers and technicians spent a few harrowing nights working virtually 'round the clock to isolate and remedy the few remaining "bugs" in the next OSCAR just prior to its shipment to the U.S.A. for launch from Vandenberg AFB, California. (See related story elsewhere in this ASR.)

All's well, however, as the last of the malfunctions was cleared from the CCD (charge-coupled device) slow-scan TV camera system during the week prior to shipment. G3YJO, UoSAT Program Manager, Martin Sweeting, and his crew will accompany UoSAT on its trip to the U.S.A.

Meanwhile AMSAT UK has announced additional details on the general operating parameters of the spacecraft.

Propagation Experiment Beacons: 7050, 14002, 21002, 29510 kHz each with an approximate transmitter power of 100 mW.

General Beacon: 145.825 MHz at 350 mW RF power output.

Engineering Beacon: 435.025 MHz at 650 mW power output.

UHF/SHF Beacon Experiment: S Band beacon, 2401.0 MHz at 125 mW output and X Band beacon, 10.470 GHz at 125 mW output. The S-band xmtr uses a 3½ turn helix while the X Band antenna is a slotted 3-turn helix both with RHCP. The HF beacons will take advantage of the 50 foot long gravity-gradient stabilizer boom to provide lower radiation resistance especially on the 40-meter beacon which would be substantially less effective with a physically smaller antenna.

The orbit planned for UoSAT is a sun-synchronous, polar orbit with a nominal altitude of 530 km (330 miles), inclination of 97.5 degrees and period of 98 minutes.

The classic Keplerian elements of the anticipated orbit are:

Semi major axis: 6918.5 km

Inclination: 97.5 degrees

Eccentricity: 0.0015

Argument of Perigee: 62.7 degrees

Right Ascension of Ascending Node: 219.3 degrees

Mean height: 530 km

Telemetry encoding information is now being released by the University of Surrey. The telemetry output can be 1200, 600, 300, 110 or 75 baud ASCII as well as 45.5 baud Baudot, 10 or 20 wpm Morse encoded cw or synthesized voice. The telemetry will be available to either or both the general and engineering beacons in any combination. The modulation scheme is AFSK (NBFM) with a nominal 5 kHz shift. Data encoding for the 1200 baud rate has a 1200 Hz tone denoting logic zero and a 2400 Hz denoting logic one. Thus, since the transmission is phase-synchronous, a 1 comprises two complete cycles (zero crossings) and a 0 is one cycle (zero crossing). At data rates below 1200 baud the data sense is inverted, ie, the 1200 Hz signal corresponds to a 1 and the 2400 Hz signal is a 0.

AMSAT UK and University of Surrey staff will announce the operational status of the UoSAT spacecraft about two weeks after the launch. ASR will of course QSP details as they become available.

## ASOPs: Guide To Users

Beginning in early 1979, an organization called the Phase III Operations Planning Committee began meeting under K1HTV, AMSAT Vice-President for Operations. One of the objectives set out for the Committee was the formulation and publication of the Phase III Operations Manual. The Project Manager named was W2GFF, Dick Peacock. Work on the Phase III Operations was suspended after the loss of Phase IIIA. However, W2GFF and K1HTV announced recently that the Project has been reignited and is now proceeding full speed ahead in anticipation of Phase IIIB.

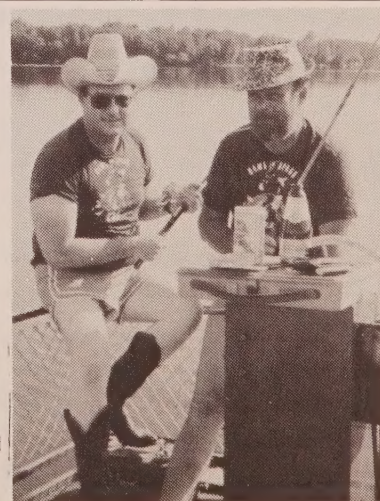
The Operations manual is envisioned as a comprehensive document covering such areas as tracking, passband procedures, telemetry decoding, basic orbital information, Special Service Channel description and so forth. The Phase III Operations Manual would be a so-called handbook for the newcomer and veteran alike to become familiar with and to become proficient in the use of the Phase III satellites.

AMSAT Executive Vice President WA2LQQ recently introduced a new facet of the Phase III Operations Manual called AMSAT Standard Operating Procedures or ASOPs for short. The purpose of the ASOPs, which will comprise an important fraction of the Operations Manual, is to establish a standard or benchmark for various aspects of amateur radio satellite communications. It is intended that the development of the ASOPs will be highly interactive, i.e., members will actively participate in the formulation of the ASOPs. The Operations Procedures resulting will thus be the product of the operating experience of a broad cross-section of users combined with the insight of the leadership.

Satellite users with suggestions for procedures they wish to nominate as an ASOP are cordially invited to submit same to AMSAT HQ, Attention K1HTV. Each ASOP which is accepted will be published in the Operations Manual and will be annotated with the author's callsign. The following two candidate ASOPs have been received to date from the stations indicated.

1. To compensate for the effects of Doppler Shift, adjust your *transmit* uplink so the downlink frequency remains unchanged. In this way you will avoid the possibility of "sliding" into another QSO. (WD4FAB)
2. In order to reduce the effects of audio feedback and increase readability, always use earphones when transmitting ssb on the satellites. (WB4ZXS)

Would you buy a used computer from these men? W3IWI (left) and W0PN (right) don their "Hams In Space" T-Shirts for a fishing expedition on a lake not far from W0PN's Duluth, MN home. Ron is chiefly responsible for AMSAT's ground control software based on DJ4ZC's IPS language. Tom is also involved in AMSAT's computer systems.





## ASR Spotlight On: VE3TW

What do a former lighthouse keeper, a Royal Canadian Air Force radar officer and a ham with a half century of achievement have in common? Everything, it seems! For such is the variegated life line of Cyril (Cy) Williamson, VE3TW.

Now living comfortably with his lovely XYL, Ethel, 10 miles west of Niagara Falls and 30 miles south of Toronto, Cy recently recounted his interesting background for ASR.

VE3TW became Cy's callsign when he was first licensed in 1933. He spent most of his operating time on the 10 and 5 meter bands in the lofty heights of what were then called the VHF and UHF bands. His all-homebrew rig was built around a super-regen receiver. His "aerial" comprised a vertical 8JK beam with open wire feeders.

During the "big war" Cy was in the RCAF and was on loan to the Royal Air Force in Britain with a detachment of radar personnel. Retiring in 1949 with the grade of Flight Lieutenant, Cy later took the position of lighthouse keeper at Port Weller, Lake Ontario. Cy virtually brims with enthusiasm when recounting his 25 years on the lake. It was a few years after taking up residence at the lighthouse that Cy and family got their worst scare when hurricane Hazel threatened to drown the place. Remarkably, no damage was done, though. Not even an "aerial" was downed thanks, no doubt, to some good forethought. It was also about this time that Ethel got the hamming bug. When you're one mile out on a lake, it's very difficult to find a backyard fence over which to converse with neighbors!

Ethel then obtained the call VE3DTW and would "gossip" for hours from her sea-perch when her favorite 10 meter band was open. Cy points out too that Ethel found the time to write a book about her experiences called: *The Light on the Seaway*.



As so many others active today in amateur satellites have expressed, Cy's interest in satellites began with news of Sputnik. Four years later he was one of the hams around the world who tracked OSCAR 1 and anxiously listened for its "HI" signal. He became most active on AMSAT-OSCAR 6 and was awarded the Satellite DX Achievement Award for his AO-6 efforts. Cy became an AMSAT life member in that era and holds LM-254.

Cy is still quite active on HF and VHF holding many time-honored skeds with friends around the world from his vintage Collins-equipped HF shack and, lately, from his separate satellite communications shack. He has equipment lined up for the L-band transponder of Phase IIIB including a 1296 MHz amplifier he built a few years ago. Cy confesses to being slightly more technically inclined than operationally oriented and readily admits amazement with what has been accomplished by AMSAT in advancing the amateur science/art.

In leaving our composite radar officer/lighthouse keeper/veteran ham, we come away with the distinct impression of an enormously satisfied individual pleased with his lot. For all the members of AMSAT, on the other hand, ASR is terribly proud to list the likes of VE3TW among our number. Tks to a FB OM and his FB XYL. 73 de ASR es AMSAT!

## AMSAT Net En Espanol

AMSAT-Mexico President Dave Liberman, XE1TU, has announced that commencing Sunday, 6 Sept. 81, a Spanish language AMSAT Net will begin weekly operations. Dave has decided to begin the Net at 1900 UTC Sundays on 14,180 kHz to be concurrent with the AMSAT International 15 meter Net which meets on 21,280 at 1900 UTC.

NCS will be XE1TU to start with but Dave will be actively recruiting alternate NCS stations to share the load.

In a related matter, Dave will be shepherding the Spanish version of *AMSAT Satellite Report* which will begin publication in a few weeks.

During his visit to the AMSAT Lab last July 8, Dave apprised AMSAT Officials of what he perceived as a large, latent interest in satellites in Latin America which needed to be catalyzed. Since those initial discussions, Dave

has determined the level of interest continues to be quite strong as evidenced by the number of Latino stations attempting to contact XE1TU each time he makes an appearance on the regular 20 and 15 meter AMSAT International Nets. Stations requiring further information or who would like to assist Dave with either (or both) the Net or ASR En Espanol are encouraged to contact Dave at:

David Liberman, XE1TU  
AMSAT-Mexico  
Bosque de Sayula, 22  
Mexico, 10  
Mexico

ASR apologizes for having misspelled Dave's name twice (count 'em) on previous occasions!



## Area Coordinator Update

AMSAT Vice President for Operations K1HTV reports a high level of enthusiasm among AMSAT's Area Coordinators many of whom are newly-appointed. AMSAT *Satellite Report* will periodically feature "News and Views" from the Area Coordinators.

Southern Illinois Coordinator and well-known publisher of the Mode J Newsletter, Larry Roberts, W9MXC, is busy as usual with seminars at the Columbia, MO hamfest, as well as presentations for the St. Peters ARC and Mississippi Valley DX Club. Larry teams with neighboring AC W0SL (See ASR Spotlight Issue #11) for these forays into the "wilds" of Illinois and Missouri and notes the "two-man" system for giving AMSAT talks is very effective. One result of the team approach is the reduction in the "heat" or stress of the moment. Larry is extra busy this year with duties as President of the Gateway Amateur Radio Assn. which represents 18 St. Louis area clubs, but still finds time to coordinate activities of the Mode J club and get on the satellites occasionally just long enough to add to the impressive list of awards and achievements already garnered.

Another busy fellow is AC K2KLV, Norm Bernstein of Utica, NY. Anyone who has run into Norm at an AMSAT meeting or New York area hamfest will be interested to learn that his elaborate mobile satellite station has been transplanted into a new car. It probably has already made the rounds at numerous summer hamfests. Norm is quite involved in AMSAT presentations in the upstate New York area. Recently, he spoke to the Armed Forces Communications Electronics Assn. (AFCEA) meeting. Here is an idea for other Coordinators. Norm provides up-to-date news of the amateur space program on a local radio show which deals weekly with Amateur Radio! Sounds like a terrific idea for getting the AMSAT message across!

It is hard to envision a more picturesque scene. Tall pine trees towering over a crystal-clear lake; the impressive peaks of the Rockies and Tetons in the background. Yet here, in this pastoral scene is a bizarre antenna pointed at the heavens. Not to worry! It's just Utah Area Coordinator Larry Jacobs, WA7ZBO, running the OSCAR demonstration at the WIMU (Wyoming, Idaho, Montana, Utah) Hamfest just next door to Yellowstone Park. Larry has managed over 20 AMSAT presentations over the past 6 years as AC, and plans more this year including demonstrations for Engineering classes at the University of Utah and Brigham Young University. Larry shares a tip many other Area Coordinators have found useful on live demonstrations: remember to bring a tape recording of a successful pass — "just in case."

Area Coordinators—let ASR know what you're doing! AMSAT members (and especially your fellow coordinators) would like to hear from you! Write: ASR, Attn. KE0T, P.O. Box 177, Warwick, NY 10990.

## Central States Kudos to WB6NMT

The annual Central States VHF Society conference was held at Sioux Falls, South Dakota 30 Jul. through 1 Aug. A number of prominent AMSAT members and officials were on hand for the event.

Of particular note was the presentation of the Chambers Memorial Award to Louis Anciaux, WB6NMT, for his pioneering VHF/UHF work and accomplishments. Lou was cited for his 220 MHz EME work, his 2 meter W6 to KH6 QSOs as well as numerous other contributions to the field.

AMSAT is especially pleased to note that Lou, proprietor of Lunar Electronics, San Diego, has been one of the staunchest supporters of AMSAT and Project OSCAR, providing materials for satellite projects and advertising support for *ORBIT* Magazine. It is also noteworthy that this is the second consecutive year that an AMSAT Life Member has been so honored. Last year, W3GEY, Jan King, received the Chambers award. Jan is AMSAT's Vice President for Engineering.

Also on the conference agenda this year was AMSAT President Tom Clark, W3IWI, who narrated a slide presentation describing the Phase III project to the conference. Among numerous others who trekked to the northern plains were Jim McKim, W0CY and Ted Mathewson, W4FJ.

The Central States VHF Society is composed of several hundred of the nation's VHF/UHF enthusiasts. Every year the society gathers to exchange ideas, renew old acquaintances and compete in the traditional 'pre-amp noise figure and the antenna gain contests. This year was especially delightful as the assembled revelers were required to design and build a 220 MHz yagi from scratch right in the parking lot! One team, who shall remain unnamed, had a F/B ratio of — 3dBd. (It worked great but in the wrong direction; out the "back door")

Next year's event will be held in Baton Rouge, LA. Contact W4FJ for details.'

## AMSAT NCS Hospitalized

Serious concern for the health of W6DOW, Karl Klein, spurred AMSAT members around the world to action in the past few weeks. Dozens of satellite users and friends have sent Karl greetings and get-well notes to cheer the seriously ill, former West Coast AMSAT Net Control Station. Karl's XYL reports that the felicitations received to date have been highly effective in letting Karl know of wishes for his quick and complete recovery. AMSAT Headquarters announced through its President Tom Clark, W3IWI, that well-wishes were very much the order of the day and should be sent to Karl at his home. The address is:

Karl Klein, W6DOW  
21914 Dolores  
Carson, CA 90745